SOLVING THE MODEL OF SPECULATIVE ATTACK

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This work is based on the model of speculative attack which was introduced by A. Černý [3]. The model studies a fixed exchange rate regime subjected to a speculative attack by spot speculators. A part of this model is the unloading problem – a problem of the optimal selling of the amount of reserves acquired by the speculator during the fixed exchange rate period. The solution of this problem is a revenue function, which is the expected present discounted profit arising from the optimal unloading of given reserves. We may be also interested in a policy rule providing the information on the optimal amount of immediate selling when current reserves and exchange rate are given. Since the mathematical formulation of this problem is simple, the original solution was made by an approximate solution of a differential equation. However, the solution is very unstable.

We study more constructive solution methods based on dynamic programming, which are likely to be stable. This alternative view allows us to formulate and solve the extension of the model, where we consider a non-cooperative game of two speculators.

References

[1] Bellman, R.: *Dynamic Programming*, 1957.

[2] Blanchard, O. and S. Fischer: *Lectures on Macroeconomics*, (1989),279–291..

[3] Černý, A.: *Currency crises: Introduction of spot speculators*, International Journal of Finance and Economics(4), 75–90..

[4] Judd, K. L: *Numerical Methods in Economics*, (2nd ed.).